

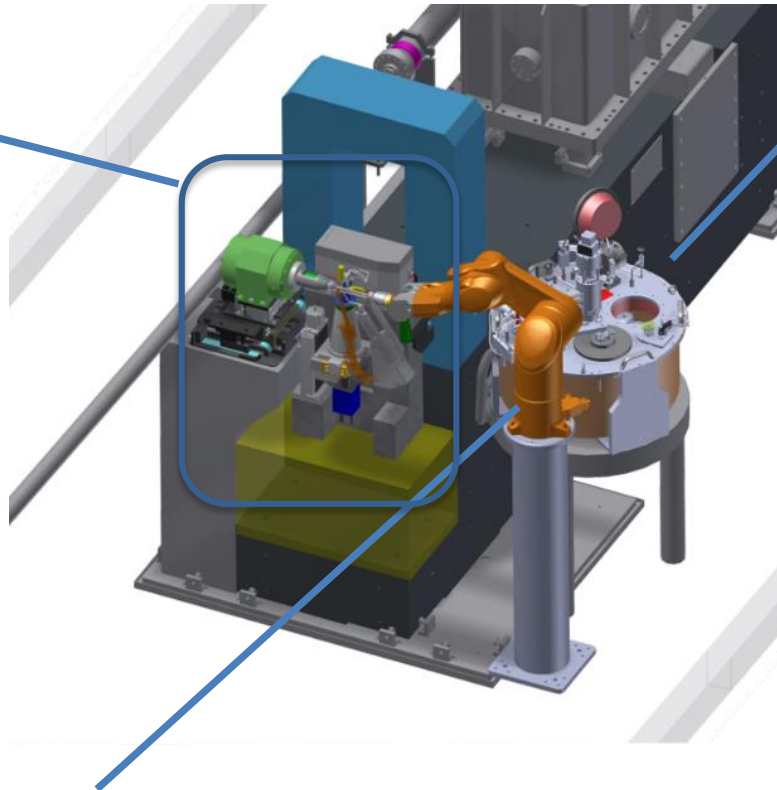
LSBR Scientific Advisory Meeting: Automation

NSLS-II, BNL, Upton, NY, March 28 2017



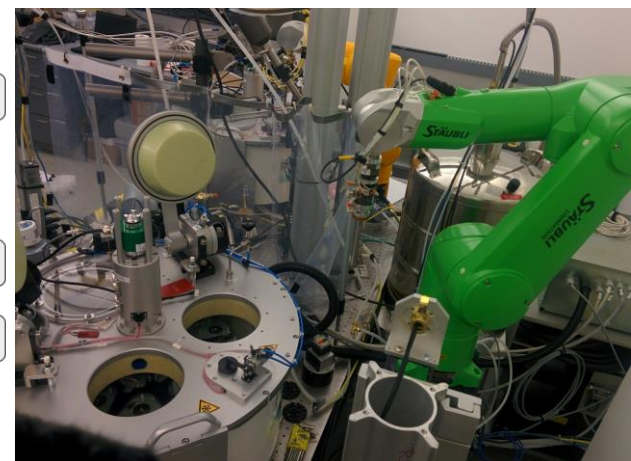
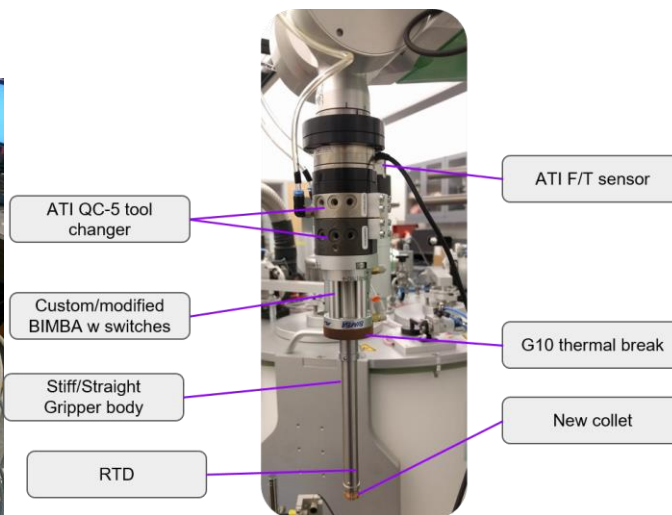
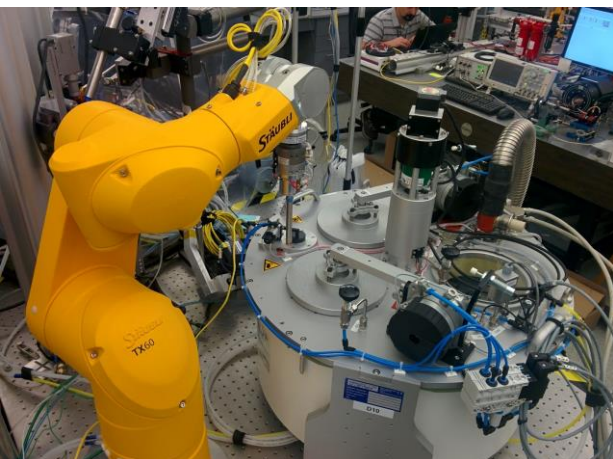
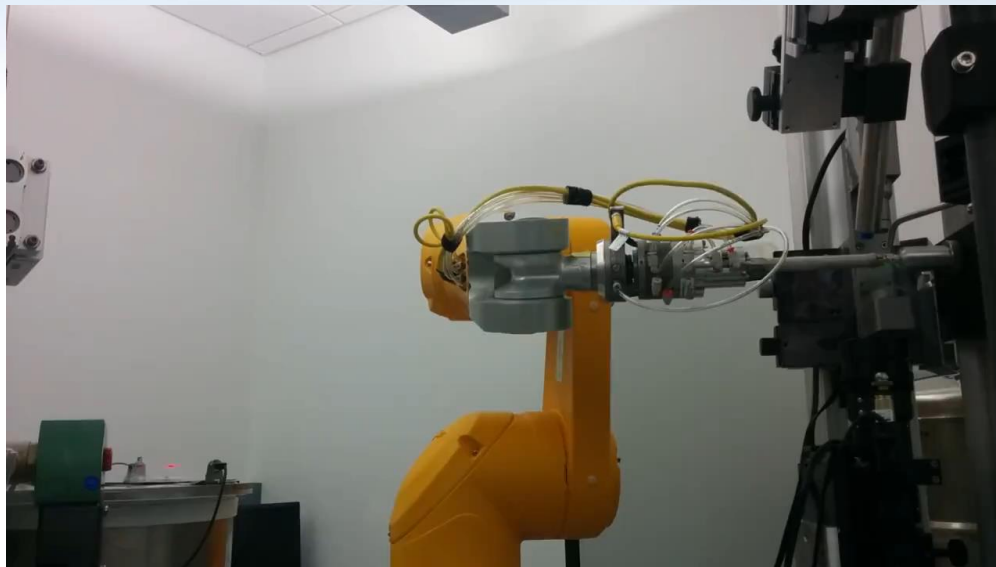
MX Automated Sample Mounting: design

High Capacity Automated Sample Changer with 24 unipucks capacity (384 samples).

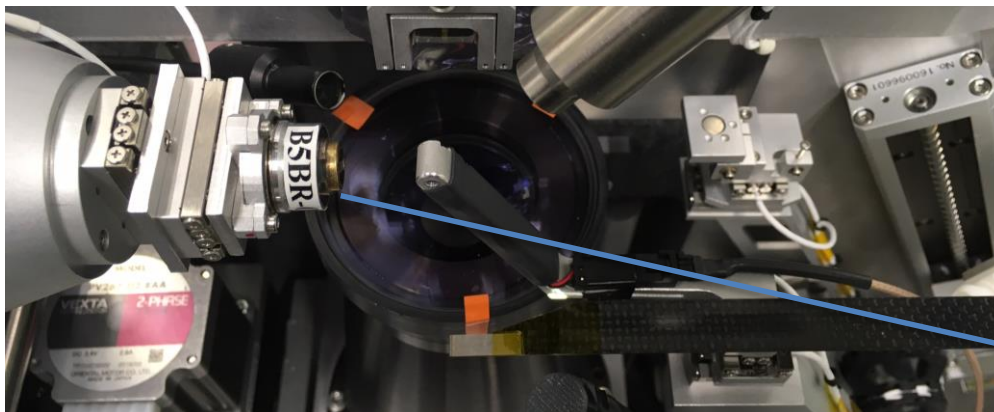
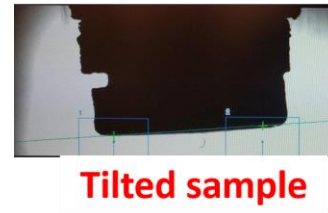
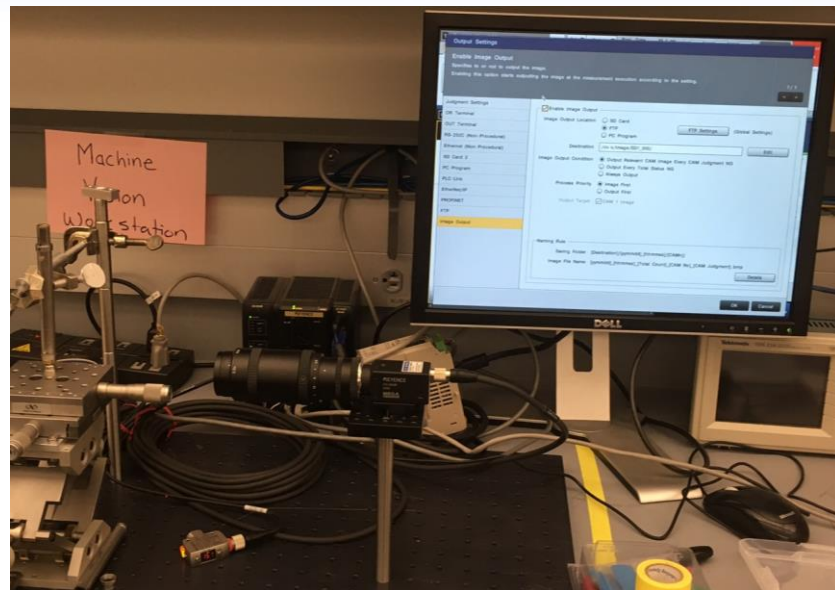


6-axis Staubli TX60/L robotic arm with NSLS-II gripper.

MX Automated Sample Mounting: initial tests



MX Automated Sample Mounting: QA tools

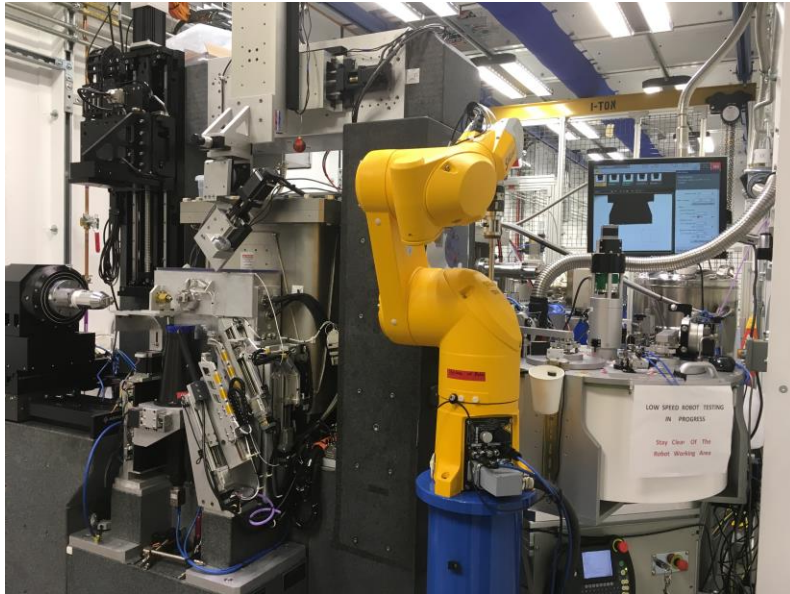


Arinax smartMagnet (9.6 mm)
Spine compatible (9.7 mm \pm 0.02).

ALS bases (9.65 \pm 0.05)

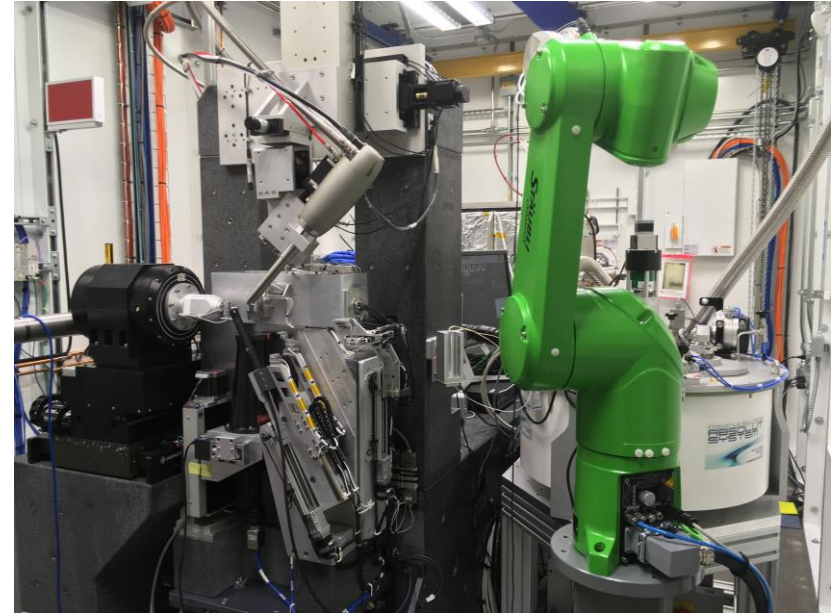
MX Automated Sample Mounting: at the beamlines

FMX Jan 2017



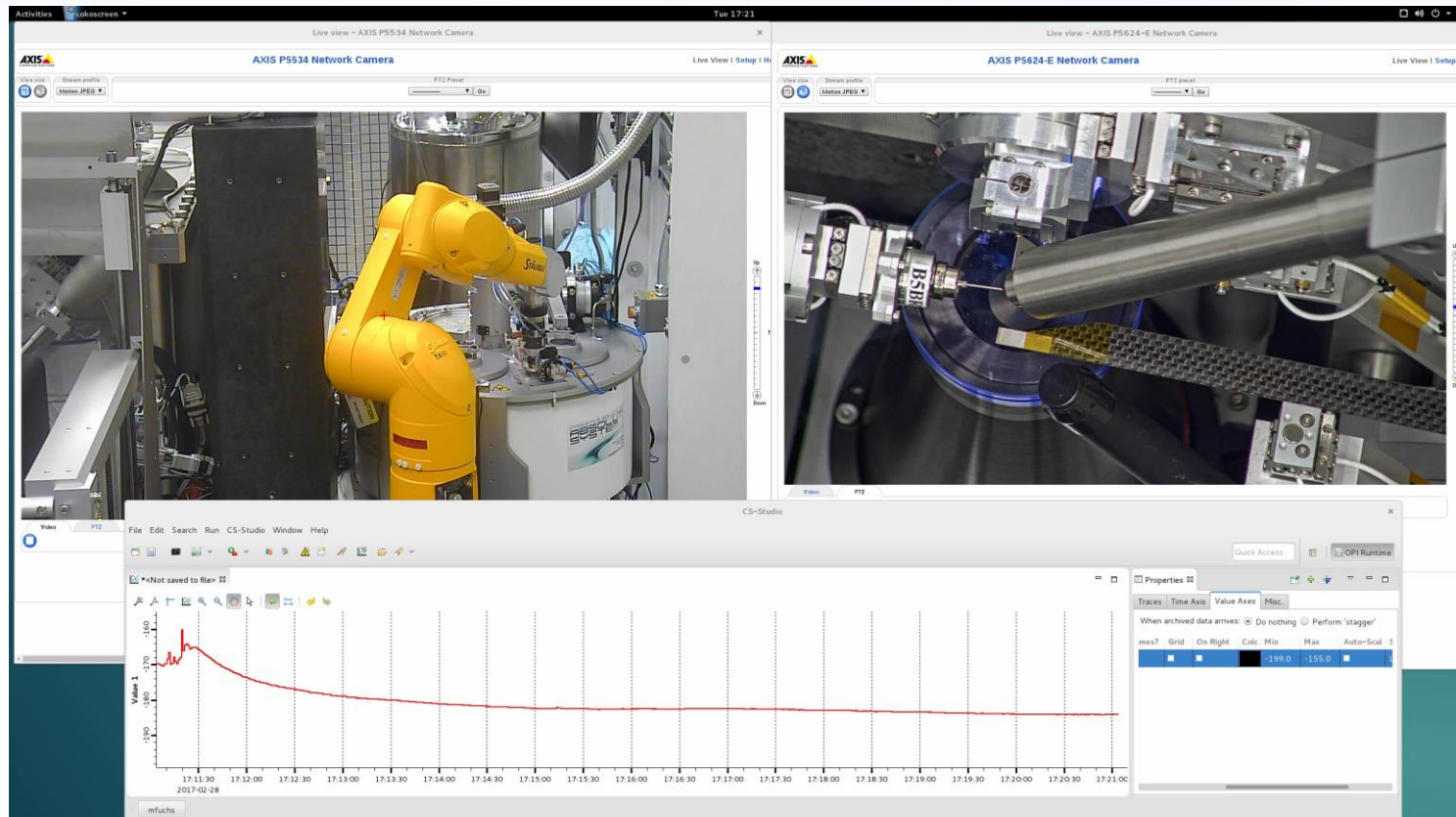
- installed, tested and commissioned
- Available to user groups
- 4 user groups so far
- Sample exchange < 60 secs

AMX Jan 2017



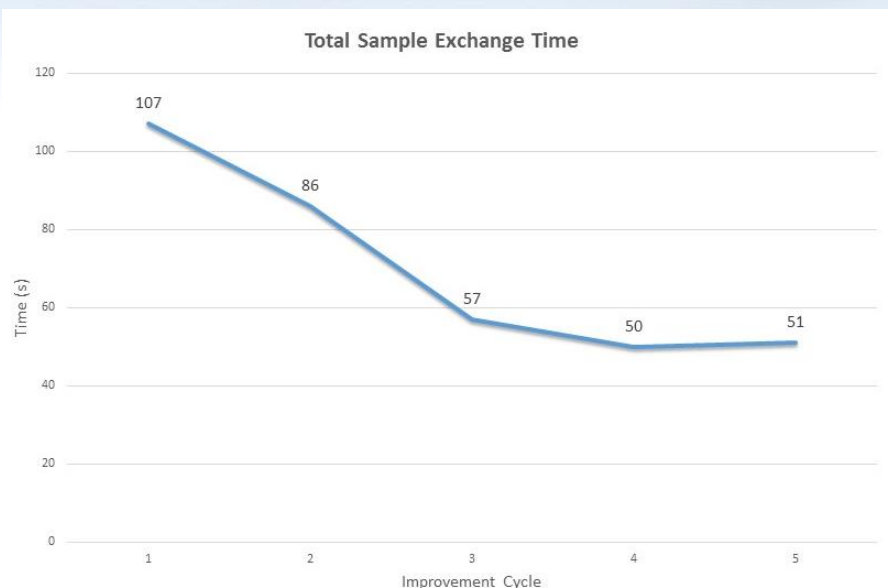
- installed, tested
- Commissioning under way
- Available to users ~ mid April

MX Automated Sample Mounting: current status



Sample exchange under 1 min

MX Automated Sample Mounting: current tasks



Continuous “timing” improvement increasing sample integrity upon transfer.

Will improve on timing, as needed.
But reliability more important.

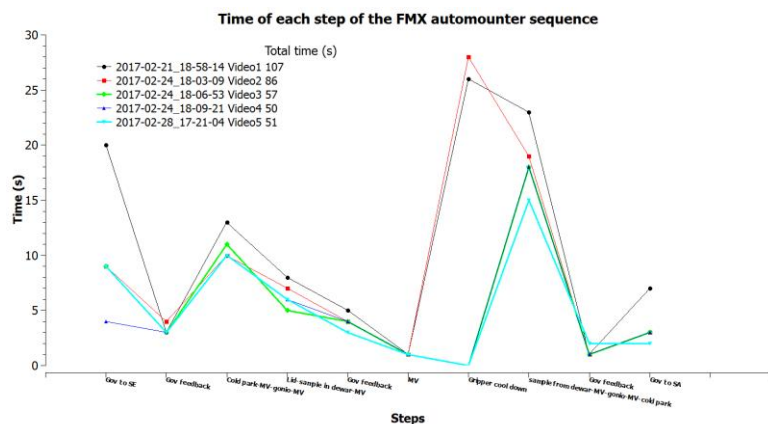
Initial results on AMX:

25 %: 159 secs

50 %: 92 secs

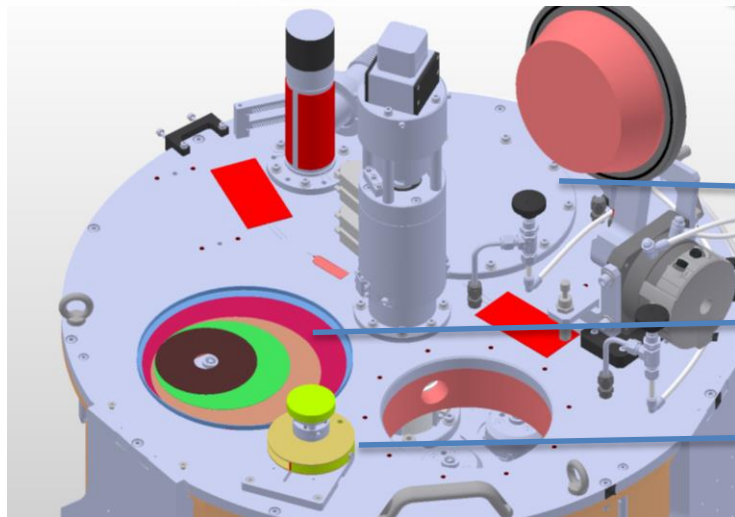
75 %: 76 secs

(cool down: 20 secs)



Special attention to balance between speed / reliability and sample integrity.

MX Automated Sample Mounting: current tasks

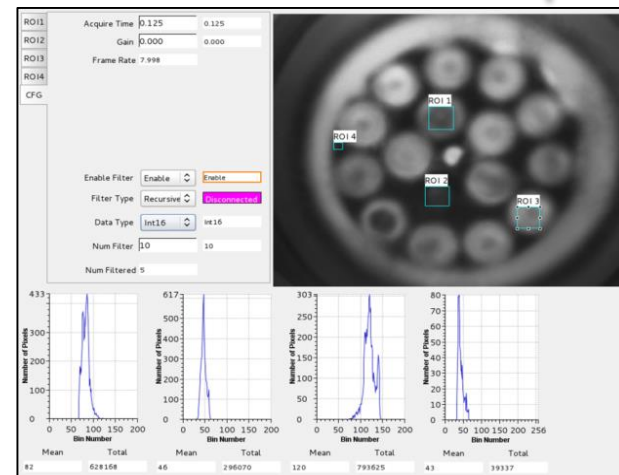


In LN2 sample visualization

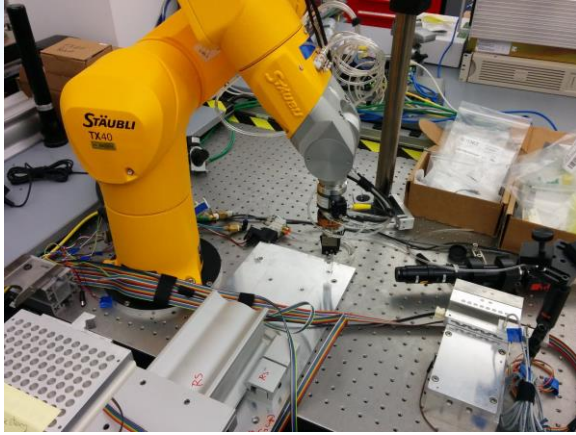
Floating lids

Gripper de-icer

“real time” FT sensor



Automated Sample Mounting: LIX



Robot / gripper available (2015)

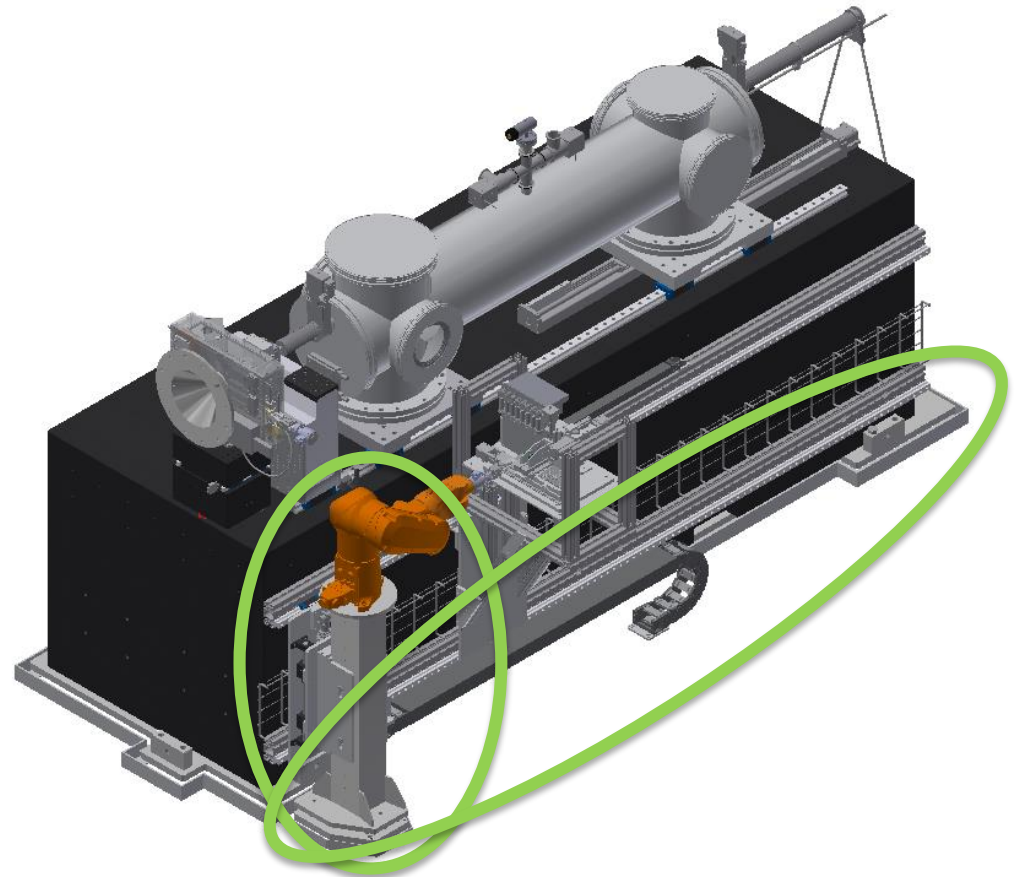
Basic robot functions written (2015)

Implementation at beamline:

Design completed.

Procurement of components: ongoing

Assembly at beamline in summer



Conclusion

FMX : automounter available for users with 3 Pucks
whole capacity to be implemented soon after

AMX : automounter will be available for users with 3 Pucks in 1-2 weeks
whole capacity to be implemented soon after

LIX : automounter available for commissioning at beamline before Xmas 2017

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